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Hard Photodisintegration of a Proton Pair DOUGLAS HIGINBOTHAM, Jefferson Lab, ISHAY POMERANTZ, Tel Aviv University, JEFFERSON LAB HALL A COLLABORATION — The energy dependence of the high energy 90 degree center of mass photodisintegration of proton-pairs in kinematics corresponding to the proton pair (and the spectator neutron) nearly at rest have been measured in Hall A at Jefferson Lab. Cross-section measurements were taken for eight photon energies in the range of 0.8 - 4.7 GeV. Scaling of the cross section by s^{-11} was observed, in agreement with the constituent counting rule prediction, but commencing at $E_\gamma \sim 2.2$ GeV, rather than 1 GeV as in the deuteron (pn pair) breakup. The magnitude of the scaled cross section for pp pair breakup was found to be dramatically lower than for the breakup of pn pairs and theoretical predictions. At energies below the scaling region, the scaled cross section was found to present a strong energy-dependent structure not observed in the pn breakup. The data indicate a transition from three-nucleon hadronic photodisintegration processes at low energies to two-nucleon quark-dominated photodisintegration processes at high energies.

Douglas Higinbotham
Jefferson Lab

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